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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,242

03/26/2004

James M. Harris

RED-P002

1754

7590

07/14/2006

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EXAMINER

LEE, CLOUD K

ART UNIT

PAPER NUMBER

3753

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Period for Reply

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) 14-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I in the reply filed on 6/16/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 14-15 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II and Group III, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 6/16/2006.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-13 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

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which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1 and 6 recite the limitation "such that means for stiffening prevents the flexible membrane from contacting the cantilever" and claim 16 recites the limitation "such that the flexible membrane is prevented from substantially flexing in the normally closed condition". These limitations were not present in the originally filed application. This is a new matter rejection.

2. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris (US Patent No. 6,149,123) in view of Nestler (US Patent No. 5,040,567).

Regarding claims 1 and 6, Harris discloses a fluid guiding structure containing a fluid inlet port and a fluid outlet port (Figure 2, elements 520 and 510); a fluid communication channel (Figure 2, element 540), formed within said fluid guiding structure, fluidically coupling said fluid inlet port to said fluid outlet port; an intermediary port, formed within said fluid communication channel, said fluid inlet port being fluidically coupled to said fluid outlet port valve through said intermediary port; a cantilever element (Figure 2, element 300), moveably positioned proximate to said intermediary port within said fluid communication channel; an energy conversion body defining a chamber enclosing a working fluid (Figure 2, element 130), said energy conversion body being at least partially formed of a semiconductor material, said energy conversion body including a flexible membrane (Figure 2, element 200) mechanically coupled to said cantilever element through a first pedestal (Figure 2, element 210); said cantilever element normally closed over an inlet port (Col 4 line 20-23). Under a more narrow

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interpretation of "stiffening means", Harris fails to disclose a stiffening means positioned on said flexible membrane proximate to said first pedestal and said fluid inlet port wherein the means for stiffening prevents the flexible membrane from contacting the cantilever.

Nestler discloses the stiffening means positioned on said flexible membrane proximate to said first pedestal and said fluid inlet port (Figure 2 element 20C) wherein the means for stiffening prevents the flexible membrane from contacting the cantilever. It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided a stiffening means positioned on said flexible membrane proximate to said first pedestal and said fluid inlet port wherein the means for stiffening prevents the flexible membrane from contacting the cantilever, as taught by Nestler, to prevent flexible membrane from deformation during operation (Col 3 line 50-54).

Regarding claims 2 and 7, "wherein said cantilever element includes a set of beams operative as a restoring force during deflection of said valve element by said flexible membrane." Harris discloses cantilever element includes a set of beams operative as a restoring force during deflection of said valve element by said flexible membrane (Figure 7).

Regarding claims 3 and 8 "wherein said flexible membrane is single crystal silicon between 15 and 100 microns thick". Harris discloses a single crystal silicon between 15 and 100 microns thick (Col 6 line 51-53).

Regarding claims 4 and 9 "wherein said stiffening means is one or more pedestals". Nestler discloses a stiffening mean is a pedestal (Figure 2 element 20C). Note, a pedestal is defined as any foundation, base or support.

Regarding claims 5 and 10 "wherein said stiffening means is one or more regions of increased thickness of said flexible membrane". Nestler discloses a stiffening mean increased thickness of said flexible membrane (Figure 2 element 20C).

Regarding claim 11 "wherein said actuation means can extend said flexible membrane in a manner proportional to an amount of energy supplied to said actuation means". Harris discloses an actuation means can extend said flexible membrane in a manner proportional to an amount of energy supplied to said actuation means (Col 13 line 46-48).

Regarding claim 12 "wherein said cantilever element contains a compliant element attached onto a portion covering said inlet port". Harris discloses a cantilever element contains a compliant element attached onto a portion covering said inlet port (Figure 2).

Regarding claim 13 "wherein said compliant element is a PTFE material". Harris discloses a micro-valve having a "wetted surfaces" made of or coated with Teflon® material, which is considered a "PTFE material".

3. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harris (US Patent No. 6,149,123) in view of Johnson (US Patent No. 5,619,177).

Regarding claim 16, Harris discloses an actuation means attached to a flexible membrane (Figure 2); said flexible membrane attached to a cantilever element through first pedestal (Figure 2 element 210); said cantilever element normally closed over an inlet port (Col 4 line 20-23); said inlet port in fluid communication with at least one outlet port (Figure 2); and a cantilever element (Figure 2 element 300). Harris failed to disclose a second pedestal proximate to said first pedestal, wherein said second pedestal is attached to the cantilever element such that the flexible membrane is prevented from substantially flexing in the normally closed condition.

Johnson et al discloses an actuator member carrying a sensor (Note, the sensor is considered a second pedestal). It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided a sensor positioned on said cantilever element proximate to said first pedestal such that the flexible membrane is prevented from substantially flexing in the normally closed condition, as taught by Johnson, to sense the position of the cantilever element position (Col 8 line 40-44).

Response to Arguments

4. Applicant's arguments filed on 5/24/2006 have been fully considered but they are not persuasive. Applicants argue that the second stiffening element provides an "unexpected result", however, applicants have failed to provide evidence to support this argument. Applicant's arguments cannot take place as Affidavits, therefore, applicant's arguments are not persuasive. Furthermore, applicants have not recited sufficient structure of the stiffening element to distinguish over the prior art.

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In response to applicant's argument that the teachings of Nestler, which is made of steel and other metallic materials is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Nestler teaches a valve with a stiffening means and is reasonably pertinent to the particular problem with which the applicant was concerned.

In response to applicant's argument in paragraph [8], the sensor 172 provides some stiffness to the cantilever element, therefore, the examiner considers the sensor to be a second pedestal.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cloud K. Lee whose telephone number is (571)272-7206. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel can be reached on (571)272-4929. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CL



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